



Cash Rents Methodology and Quality Measures

Released September 9, 2011, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, United States Department of Agriculture (USDA).

Cash Rents Survey Methodology

Scope and Purpose: The Cash Rents Survey is conducted annually and obtains acres rented and cash rental rates from farmers and ranchers in the United States. This survey provides the basis for estimates of the current year's cash rents paid for irrigated cropland, non-irrigated cropland, and permanent pastureland. Estimates of irrigated and non-irrigated pastureland are not established due to the scarcity of irrigated pastureland. State, district, and county level cash rent estimates are published for all states excluding Alaska, pending compliance with disclosure rules and publication standards.

Estimates derived from this survey supply basic information needed by farmers to make decisions for both short-term and long-term planning. The Cash Rents estimates may also be used by individual producers in planning for their agricultural operation or by Extension or University Staff in developing operating budgets for agricultural operations in their locale.

The National Agricultural Statistics Service (NASS) was directed through the 2008 Farm Bill to collect cash rents data for use by the Farm Service Agency (FSA) in program administration. The Food, Conservation, and Energy Act of 2008, Section 2110, states, "The Secretary (acting through the National Agricultural Statistics Service) shall conduct an annual survey of per acre estimates of county average market dry land and irrigated cash rental rates for cropland and pastureland in all counties or equivalent subdivisions within each state that have 20,000 acres or more of cropland and pastureland."

Survey Timeline: The Cash Rents Survey data collection period is from the end of February through the beginning of July. Data collection is coordinated with the March Crops/Stocks, March Hogs, and Agricultural Resource Management – Phase 3 Surveys. Also during June, cash rents data are collected on the June Area Survey (JAS). National, regional, and state level cash rents estimates are published in August for all states excluding Alaska. District and county level cash rents estimates are published in September.

Sampling: The target population for cash rents estimates is all farms and ranches with \$1,000 or more in agricultural sales (or potential sales) who rent cropland or pastureland for cash. The June Area Survey utilizes an area sampling frame for national and state level estimates. The area frame contains all land in the United States (except Alaska) and is therefore complete for the Cash Rents program. The frame in each state is divided into segments of land. For more intense agricultural regions, segments are about one square mile in size. An optimal sample is selected in each state with a national sample size of about 11,000.

In addition to the Area Survey, a Cash Rent Survey is also conducted. A sample for the Cash Rents Survey is selected from the NASS List Frame. NASS maintains a list of farm and ranch operators. NASS is constantly seeking new operations from outside list sources confirmed to be qualifying farms before being added to the list. A profile, known as control data, of each operation is maintained which indicates what the farm has historically produced and a general indication of size. This information allows NASS to define sampling populations that are specific to each survey and employ advanced and more efficient sample designs.

Samples for the Cash Rents Survey are drawn with a county-level stratified design to produce state, district, and county level estimates. Large operations in each county are stratified into the census strata, where all are included in the sample. The national sample size for the Cash Rents survey is approximately 240,000.

Data Collection: All federal data collections require approval by the Office of Management and Budget (OMB). NASS must document the public need for the data, show the design applies sound statistical practice, ensure the data do not already exist elsewhere, and show that the public is not excessively burdened. The cash rents questionnaires must display an active OMB number that gives NASS the authority to conduct the survey, a statement of the purpose of the survey and the use of the data being collected, a response burden statement that gives an estimate of the time required to complete the form, a confidentiality statement that the respondent's information will be protected from disclosure, and a statement that response to the survey is voluntary and not required by law.

Data collection for the Cash Rents Survey is mainly conducted by mail and telephone. The initial mail-out occurs in mid-February followed by a second mailing in mid-March. A questionnaire is enclosed with a letter for the respondent to complete and return by mail. The questionnaire can also be completed securely online. Non-response phone follow-up is conducted using Computer-Assisted Telephone Interviews (CATI) at Data Collection Centers from April to July. Personal interviews are limited to large operations or those with special handling arrangements.

Survey Edit: As survey data are collected and captured, they are edited for consistency and reasonableness using automated systems. The edit logic ensures administrative coding follows the methodological rules associated with the survey design. Relationships between data items on the current survey are verified and in certain situations, items are compared to data from earlier surveys to make sure certain relationships are logical. The edit determines the status of each record to be either "dirty" or "clean" (i.e., failing or passing the edit requirements for consistency and reasonableness). Dirty records must be updated and reedited, or certified by an analyst to be accurate. Corrected data are reedited interactively. Only clean records are eligible for analysis tools and summary.

Analysis Tools: Edited Cash Rents data are processed through an interactive analysis tool which displays data for all reports by item. The tool provides various scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to other similar records within their state, district, and county. Outliers and unusual data relationships are investigated by Field Office and Headquarters staff to determine if they are correct. Suspect data found to be in error are corrected, while data found to be correct are retained.

Nonsampling Errors: Nonsampling errors are present in any survey process. These errors include reporting, recording, editing, and imputation errors. Steps are taken to minimize the impact of these errors, such as questionnaire testing, comprehensive interviewer training, validation and verification of processing systems, detailed computer edits, and the analysis tool.

Nonresponse Adjustment: Response to the Cash Rents survey is voluntary. Some producers refuse to participate in the survey, others cannot be located during the data collection period, and some submit incomplete reports. These nonrespondents must be accounted for if accurate estimates of cash rental rates are to be made. For this survey, nonresponse adjustments are made by reweighting techniques applied to the data from reporting farms and ranches.

Estimators: The Cash Rents surveys utilize direct expansions and/or ratio expansions for all survey indications. For both list and area frame survey respondents, direct expansions are calculated by applying sampling weights and non-response adjustments to reported data and summing these values. Similarly, ratios are calculated by applying sampling weights and non-response adjustments to data when both the numerator and denominator are reported. For the Cash Rent Survey, ratio estimates are used to set the district and county level cash rental rates, while direct expansions are used to set acreage estimates used to weight the rental rates within a state.

Outliers: NASS conducts a review of outliers found in cash rents data by reviewing rental rates for all records for the same practice (irrigated cropland, non-irrigated cropland, or permanent pastureland). Field Office (FO) and Headquarters (HQ) staff work together to get the data as accurate as possible. The FO staff reviews outliers within their state, and the HQ statistician examines outliers across all states for the published categories. A determination is made as to whether an adjustment to cash rental rate data is required. Most outliers trace back to unique situations that do not exist in the target population as much as the survey weight would indicate.

Estimation: When all samples are accounted for, all responses fully edited, and the analysis material reviewed, each assigned FO executes a summary to evaluate and analyze the data. The summary results provide multiple point and ratio estimates and information used to assess the performance of the current survey and evaluate the quality of the survey estimates. FOs are responsible for performing a detailed review of their survey data, interpreting the survey indications, and must provide justification to the Agricultural Statistics Board (ASB) in cases where recommendations deviate from survey results. The ASB reviews all state, district, and county level recommendations and establishes official estimates.

Cash Rents Sample Size, Response Rate, and Coefficients of Variation – States and United States: 2011

State	Sample size (number)	Response rate (percent)	Coefficients of variation		
			Irrigated Cropland (number)	Non-irrigated Cropland (number)	Pastureland (number)
Alabama	5,448	81.6	7.6	2.5	1.9
Arizona	901	90.3	10.3	(S)	57.2
Arkansas	5,816	79.8	4.6	8.4	3.7
California	6,074	76.3	7.6	17.0	9.7
Colorado	3,806	78.5	8.1	4.7	5.9
Connecticut	421	77.7	(S)	9.4	(S)
Delaware	293	77.5	2.1	3.6	(S)
Florida	2,576	75.7	14.6	5.5	6.1
Georgia	5,144	72.6	4.6	3.0	7.9
Hawaii	503	81.1	34.6	18.7	14.0
Idaho	3,303	81.4	3.5	8.6	18.5
Illinois	9,489	76.0	3.4	1.9	5.7
Indiana	8,251	62.5	6.3	1.3	11.0
Iowa	12,274	69.1	2.9	1.0	4.1
Kansas	10,511	69.2	3.5	1.9	2.6
Kentucky	7,016	81.2	8.9	3.0	3.2
Louisiana	3,595	81.7	3.5	4.7	7.2
Maine	564	81.9	(S)	10.8	(S)
Maryland	1,625	77.4	3.6	2.8	5.1
Massachusetts	650	79.5	10.6	10.0	(S)
Michigan	5,752	75.4	5.7	2.5	10.7
Minnesota	9,439	74.2	3.7	1.1	7.0
Mississippi	4,638	83.2	1.0	2.4	7.3
Missouri	10,944	72.0	6.0	5.4	2.6
Montana	4,433	77.1	5.6	3.9	7.6
Nebraska	10,765	73.4	0.7	1.9	3.3
Nevada	392	83.2	7.8	(S)	18.9
New Hampshire	256	77.3	(S)	12.2	(S)
New Jersey	929	84.1	8.9	3.7	(S)
New Mexico	2,077	75.5	8.5	17.7	24.8
New York	4,176	77.5	21.9	2.4	40.3
North Carolina	7,780	74.7	5.1	2.0	7.5
North Dakota	6,438	70.9	9.7	1.7	1.9
Ohio	7,767	73.3	7.6	2.1	6.0
Oklahoma	8,435	71.6	7.4	2.0	3.2
Oregon	3,311	81.2	6.6	5.5	8.2
Pennsylvania	4,558	78.1	19.6	5.2	13.7
Rhode Island	128	75.0	(S)	(S)	(S)
South Carolina	2,707	83.2	6.8	2.1	3.0
South Dakota	7,634	67.6	8.8	2.5	8.4
Tennessee	6,970	84.8	4.4	3.5	3.2
Texas	19,928	81.8	3.9	14.7	14.3
Utah	2,458	85.5	6.3	19.3	12.6
Vermont	756	79.8	(S)	9.1	15.2
Virginia	5,727	76.9	7.5	4.2	4.5
Washington	2,902	80.9	4.6	8.1	10.8
West Virginia	1,611	83.5	(S)	13.6	5.7
Wisconsin	7,033	80.9	7.4	2.0	7.0
Wyoming	1,756	84.7	5.9	7.3	3.6
United States	239,960	76.0	(NA)	(NA)	(NA)

(NA) Not available.

(S) Insufficient number of reports to establish an estimate.

Information Contacts

Process	Unit	Telephone	Email
Estimation	Environmental, Economics, and Demographics Branch	(202) 720-6146	HQ_SD_EEDB@nass.usda.gov
Data Collection	Program Administration Branch	(202) 690-8747	HQ_CSD_PAB@nass.usda.gov
Questionnaires and Editing	Editing and Questionnaire Branch.....	(202) 720-6201	HQ_CSD_DCB@nass.usda.gov
Sampling	Survey Sampling Branch.....	(202) 720-3895	HQ_CSD_SB@nass.usda.gov
Analysis and Estimators	Statistical Methods Branch.....	(202) 720-4008	HQ_SD_SMB@nass.usda.gov
Dissemination and Webmaster	Data Dissemination Section	(202) 720-7017	HQ_DAPP_MISO@nass.usda.gov
Media Contact	Public Affairs Section.....	(202) 720-7017	HQ_DAPP_MISO@nass.usda.gov

Access to NASS Reports

For your convenience, you may access NASS reports and products the following ways:

- All reports are available electronically, at no cost, on the NASS web site: <http://www.nass.usda.gov>
- Both national and state specific reports are available via a free e-mail subscription. To set-up this free subscription, visit <http://www.nass.usda.gov> and in the “Receive NASS Updates” box under “Receive reports by Email,” click on “National” or “State” to select the reports you would like to receive.
- Printed reports may be purchased from the National Technical Information Service (NTIS) by calling toll-free (800) 999-6779, or (703) 605-6220 if calling from outside the United States or Canada. Accepted methods of payment are Visa, MasterCard, check, or money order.

For more information on NASS surveys and reports, call the NASS Agricultural Statistics Hotline at (800) 727-9540, 7:30 a.m. to 4:00 p.m. ET, or e-mail: nass@nass.usda.gov.

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, DC 20250-9410, or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay). USDA is an equal opportunity provider and employer.